### UTILITY PATENT APPLICATION TRANSMITTAL (Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No. 14745

Total Pages in this Subpission

## TO THE ASSISTANT COMMISSIONER FOR PATENTS

**Box Patent Application** 

|                                                                                             | Box Fateur Approximation                | ် တ                           |
|---------------------------------------------------------------------------------------------|-----------------------------------------|-------------------------------|
| Transmitted herewith for filing under 35 U.S.                                               | Washington, D.C. 20231                  | t and instinction for all     |
| 0E11C                                                                                       | C 111(a) and 37 C.F.R. 1.53(b) is a new | utility patent application is |
| Transmitted herewith for filing under 35 U.S.                                               | O. 111(a) and a                         |                               |
| Transmitted nerewith for filing direction invention entitled:  NOVEL COMPUTATION WITH NUCLE | COMPUTED A                              | ND SOFTWARE FOR               |
| invention entitled.                                                                         | TIC ACID MOLECULES, COMPUTER A          | MAD DOL 2 WILLIAM             |
| NOVEL COMPUTATION WITH NUCLE                                                                | AC MCID III                             |                               |
| COMPUTING                                                                                   |                                         |                               |
| COMPOTING                                                                                   |                                         |                               |
|                                                                                             |                                         |                               |

| Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 C.F.R. 1.55(b) is a new section of the section of |  |  |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|
| invention entitled:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |  |
| NOVEL COMPUTATION WITH NUCLEIC NO.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |  |  |  |
| COMPUTING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |  |  |  |
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| and invented by:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |  |  |
| Akira Suyama, et al.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |  |  |  |
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| to analytho requisite information:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |  |  |  |
| If a CONTINUATION APPLICATION, check appropriate box and supply the requisite information:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |  |  |
| If a CONTINUATION APPLICATION, check appropriate a serious continuation of prior application No.:  Continuation Divisional Continuation-in-part (CIP) of prior application No.:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |
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| Which is a:  Continuation Divisional Continuation-in-part (CIP) of prior application No.:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |  |  |  |
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| Continuation Divisional Continuation-III-part (511)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |  |
| Enclosed are:  Application Elements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |  |
| Application = 10000000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |  |  |  |  |
| Application Elements  1.  Filing fee as calculated and transmitted as described below  2.  Specification having 58 pages and including the following:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |  |  |
| pages and including the following:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |  |  |  |
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| a. 🗷 Descriptive Title of the Invention                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |  |  |  |
| Related Applications (if applicable)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |  |  |  |
| b. Cross References to Related Application (if applicable)  c. Statement Regarding Federally-sponsored Research/Development (if applicable)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |  |  |
| c. Statement Regarding Federally Sports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |  |  |  |
| d.   Reference to Microfiche Appendix (if applicable)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |  |  |
| e. 🗷 Background of the Invention                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |  |  |
| f. 🗷 Brief Summary of the Invention                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |  |
| Brief Description of the Drawings (if drawings filed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |  |  |
| u                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |  |  |  |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |  |  |  |
| i. 🗷 Claim(s) as Classified Below                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |  |  |  |
| j. 🗷 Abstract of the Disclosure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |

# UTILITY PATENT APPLICATION TRANSMITTAL (Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No. 14745

Total Pages in this Submission

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|-------|-------------|--------------|---------------|-------|------------------------------------------------------------------------------------------------|----------------------------------------|--------------------------|-------------------------------------------------|-------------------------------------------------------|---------------------------------------|---|
| _     |             |              |               |       |                                                                                                | Application Eler                       |                          |                                                 |                                                       | 1                                     |   |
|       | 3.          | X            | Dr            | awin  | g(s) (when necessar                                                                            |                                        |                          |                                                 |                                                       |                                       |   |
|       |             | a.           | X             | F     | ormal Ni                                                                                       | ımber of Sheets                        |                          | 14                                              |                                                       |                                       |   |
|       |             | b.           |               | In    | formal N                                                                                       | umber of Sheets                        |                          |                                                 |                                                       |                                       |   |
|       | 4.          | X            | 0             | ath c | or Declaration                                                                                 |                                        |                          |                                                 |                                                       |                                       |   |
|       |             | a            | ×             | i k   | owly executed (origi                                                                           | iai oi oopy)                           |                          | Unexecuted                                      | e e e mbel                                            |                                       |   |
|       |             | b            | . $\sqsubset$ | ) (   | copy from a prior app                                                                          | lication (37 CFR 1                     | .63(                     | d)) (for continuati                             | on/divisional application only)                       |                                       |   |
|       |             | c            | . 🗵           |       | Vith Power of Attorn                                                                           |                                        | t Pov                    | wer of Attorney                                 |                                                       |                                       |   |
|       |             | d            | l. [          |       | DELETION OF INVE<br>Signed statement att<br>see 37 C.F.R. 1.63(d                               | ached deleting inv<br>(2) and 1.33(b). |                          |                                                 | e prior application,                                  |                                       |   |
|       | 5           | . [          | -             | The   | poration By Reference<br>entire disclosure of<br>r Box 4b, is consider<br>porated by reference | ed as being part o                     | b is o<br>on, f<br>f the | checked)<br>from which a co<br>disclosure of th | opy of the oath or declarate accompanying application | ition is supplied<br>on and is hereby |   |
| 10 13 | 1<br>1<br>1 | <b>5</b> . [ | <b>.</b>      | Com   | puter Program in Mi                                                                            | crofiche (Appendix                     | ()                       |                                                 |                                                       |                                       |   |
|       | E3          | 7. [         | _             | Nuc   | eotide and/or Amino                                                                            | Acid Sequence S                        | ubmi                     | ission (if applica                              | ble, all must be included)                            |                                       |   |
| ١     |             |              | a.            |       | Paper Copy                                                                                     |                                        |                          |                                                 |                                                       |                                       |   |
|       |             |              | b.            |       | Computer Readable                                                                              | Copy (identical to                     | con                      | nputer copy)                                    |                                                       |                                       |   |
| ١     |             |              | C.            |       | Statement Verifying                                                                            | ldentical Paper a                      | nd C                     | computer Reada                                  | ble Copy                                              |                                       |   |
| 1     |             |              |               |       |                                                                                                | Accompany                              | ing /                    | Application Par                                 | rts                                                   |                                       |   |
|       |             | 8.           | ×             | Ass   | signment Papers (co                                                                            | ver sheet & docum                      | ent(                     | s))                                             |                                                       |                                       |   |
|       |             | 9.           |               | 37    | CFR 3.73(B) Statem                                                                             | ent (when there is                     | an a                     | assignee)                                       |                                                       |                                       |   |
|       |             | 10.          |               | En    | glish Translation Do                                                                           | cument (if applicab                    | ile)                     |                                                 |                                                       |                                       |   |
|       |             | 11.          |               | inf.  | formation Disclosure                                                                           | Statement/PTO-1                        | 449                      | ☐ Copies                                        | of IDS Citations                                      |                                       |   |
|       |             | 12.          |               | ) Pr  | eliminary Amendme                                                                              | nt                                     |                          |                                                 |                                                       |                                       |   |
|       |             | 13.          | X             | ) A   | cknowledgment post                                                                             | card                                   |                          |                                                 |                                                       |                                       |   |
|       |             | 14.          | ×             | g C   | ertificate of Mailing                                                                          |                                        |                          |                                                 |                                                       |                                       |   |
|       |             |              |               |       | First Class                                                                                    | Express Mail (Sp                       | ecify                    | / Label No.): E                                 | L915257648US                                          | P01ULRG/REV05                         | _ |
|       | - 1         |              |               |       |                                                                                                |                                        |                          | 2.54                                            |                                                       | • = • = •                             |   |

## UTILITY PATENT APPLICATION TRANSMITTAL (Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

ASSIGNEE RESIDENCE: Tokyo, Japan and Claim of Prioity in Due Course

Docket No. 14745

Total Pages in this Submission

|     |   | Accompanying Application Parts (Continued)                                                                                                                                          |
|-----|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15. |   | Certified Copy of Priority Document(s) (if foreign priority is claimed)                                                                                                             |
| 16. | X | Additional Enclosures (please identify below):  ASSIGNEE NAME: OLYMPUS OPTICAL CO., LTD.  ASSIGNEE RESIDENCE: TOKYO, JAPAN  and  ASSIGNEE NAME: Mitsui Knowledge Industry Co., Ltd. |

## Request That Application Not Be Published Pursuant To 35 U.S.C. 122(b)(2)

17. Pursuant to 35 U.S.C. 122(b)(2), Applicant hereby requests that this patent application not be published pursuant to 35 U.S.C. 122(b)(1). Applicant hereby certifies that the invention disclosed in this application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication of applications 18 months after filing of the application.

#### Warning

An applicant who makes a request not to publish, but who subsequently files in a foreign country or under a multilateral international agreement specified in 35 U.S.C. 122(b)(2)(B)(i), must notify the Director of such filing not later than 45 days after the date of the filing of such foreign or international application. A failure of the applicant to provide such notice within the prescribed period shall result in the application being regarded as abandoned, unless it is shown to the satisfaction of the Director that the delay in submitting the notice was unintentional.

## UTILITY PATENT APPLICATION TRANSMITTAL (Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No. 14745

Total Pages in this Submission

#### Fee Calculation and Transmittal

| 3                                                           |                                                                                                  | CLAIMS A         | S FILED                                                         |                                                                                                                                                        |            |
|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| For                                                         | #Filed                                                                                           | #Allowed         | #Extra                                                          | Rate                                                                                                                                                   | Fee        |
| Service Harris                                              | 31                                                                                               | - 20 =           | 11                                                              | x \$18.00                                                                                                                                              | \$198.00   |
| otal Claims                                                 |                                                                                                  | - 3 =            | 8                                                               | x \$80.00                                                                                                                                              | \$640.00   |
| ndep. Claims                                                | 11                                                                                               |                  |                                                                 |                                                                                                                                                        | \$270.00   |
| ultiple Dependent C                                         | aims (check if                                                                                   | applicable)      | <u>X</u>                                                        | BASIC FEE                                                                                                                                              | \$710.00   |
| OTHER FEE (specify                                          |                                                                                                  |                  |                                                                 |                                                                                                                                                        | \$0.00     |
| OTHER FEE (specify                                          | purpose)<br>                                                                                     |                  |                                                                 | TOTAL FILING FEE                                                                                                                                       | \$1,818.00 |
| as described below Charge th Credit any Charge at Charge th | w. A duplicate of e amount of y overpayment. In additional filine issue fee set to 37 C.F.R. 1.3 | copy of this she | et is enclose<br>as filing fee.<br>d under 37 C<br>18 at the ma | Deposit Account No. 19-1013/SSMI d.  F.F.R. 1.16 and 1.17. iling of the Notice of Allowance,  Signature  Paul J. Esatto, Jr.  Registration No.: 30,749 |            |

Page 4 of 4

| ERTIFICATE OF N                 | MAIL BY "EXPRESS I               | MAIL" (37 CFR 1.10)                                 | Docket No.              |  |
|---------------------------------|----------------------------------|-----------------------------------------------------|-------------------------|--|
| plicant(s): Akira Suy           | ama, et al.                      |                                                     | 14745                   |  |
| Serial No. Filing Date Examiner |                                  |                                                     | Group Art Unit          |  |
| To be assigned                  | Herewith                         | Unassigned                                          | Unassigned              |  |
| vention: NOVEL CO<br>FOR COM    | MPUTATION WITH NUCLEIC PUTING    | ACID MOLECULES, COMPUTE                             | CR AND SOFTWARE         |  |
| I hereby certify that th        | e following correspondence:      |                                                     |                         |  |
| New Patent Application          |                                  |                                                     |                         |  |
|                                 | •                                | e of correspondence)                                |                         |  |
| is being deposited wit          | th the United States Postal Serv | vice "Express Mail Post Office to                   | Addressee" service unde |  |
| 37 CFR 1.10 in an e             | nvelope addressed to: The Assi   | istant Commissioner for Patents,                    | Washington, D.C. 2023   |  |
| June 2'                         |                                  | •                                                   |                         |  |
| (Dat                            | e)                               |                                                     |                         |  |
|                                 |                                  | Janet Grossm<br>(Typed or Printed Name of Person Ma |                         |  |
|                                 |                                  | (Typea or Printed Name of Person Mailing C          | <u>an</u>               |  |
|                                 |                                  | EL915257648                                         | US                      |  |
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Note: Each paper must have its own certificate of mailing.